

从尿中肌酐、尿素、钾、磷、镁的排泄量探讨慢性肾炎患者阴虚、阳虚的病理基础

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内容提要 本文从营养学的角度探讨慢性肾炎患者阴虚和阳虚的病理生化基础。慢性肾炎患者在相同的 Ccr 和尿素排泄量时,其肌酐系数以阳虚者明显低于阴虚者。肌酐、尿素、钾、磷、镁的排泄量也以阳虚者明显低于正常人和阴虚者。提示本病阳虚系机体营养不良和能量代谢降低,而阴虚系机体营养状况一般或偏低,而能量代谢则有所增加。

在对慢性肾炎阴虚、阳虚患者的研究中,我们曾报道了阳虚患者的内生肌酐清除率(Ccr)肌酐系数、尿尿素量、血清蛋白量、红细胞数、蛋白质和热量的摄入量,均明显低于正常值和阴虚患者;而阴虚患者的尿尿素量、血清蛋白量、红细胞数、蛋白质和热量的摄入量均比较正常,但肌酐系数却明显增高⁽¹⁾。在对高血压病与甲状腺机能亢进等患者的研究中,发现阴虚火旺者的尿肌酐量、尿尿素量和尿儿茶酚胺量均明显增高,尿肌酐量又与尿儿茶酚胺量呈正相关⁽²⁾。从而提出了机体能量代谢和营养状况的异常是中医阴虚、阳虚的主要病理基础的看法^(1,2)。本实验则观察慢性肾炎患者的尿中肌酐、尿素氮、钾、磷、镁的排泄量,再从营养学角度,进一步论证上述中医阴虚、阳虚的病理基础的看法。

方 法

一、患者阴虚、阳虚的辨证分型,仍按肾炎中医分型的初步方案⁽³⁾。对象系我院附属龙华医院肾炎专科所诊治的慢性肾炎成年患者,其中接受激素治疗者、寒热夹杂分型困难者或肾病型患者均予剔除。当研究尿钾、尿磷、尿镁和尿尿素氮的相关时,则将阴虚、阳虚以外的患者都统计在内。

二、观察指标除了 Ccr 外,尚有尿肌酐系

数、尿尿素氮、尿钾、尿磷、尿镁等五项营养学指标(均以每公斤体重每天的排泄量表示);测定上述指标时,要求患者素食三天。在统计肌酐系数时,为了排除患者性别的差异,本文将女性的肌酐系数乘以 1.0/0.8 进行修正⁽⁴⁾。

结 果

一、阴虚、阳虚患者 Ccr、肌酐系数与尿尿素氮量的比较(表1)及其三者的关系。

表 1 阴虚阳虚患者与正常人 Ccr、肌酐系数、尿尿素氮量的比较 (M±SE)

组别	例数	Ccr (ml/分)	肌酐系数 (mg/kg·天)	尿尿素氮量 (mg/kg·天)
阴虚	101	70.2±3.00**△△	24.4±0.41*△△	116.7±3.02△△
阳虚	117	39.4±3.07**	19.1±0.44**	85.3±2.38**
正常人	40	105.7±2.54	23.2±0.38	124.1±3.42

与正常人比较: *P<0.05, **P<0.01

阴虚与阳虚比较: △P<0.05, △△P<0.01(表 2 同)

由表1可见阳虚患者的 Ccr、肌酐系数与尿尿素氮量均低于阴虚患者和正常人,差异均非常显著(P<0.01)。以阴虚患者和正常人作比较,则前者的 Ccr 显著降低(P<0.01),尿尿素氮量降低不显著,但肌酐系数却明显增高(P<0.05)。

患者的肌酐系数(mg/kg·天)y和 Ccr(ml/分)x呈正相关,说明患者在肾功能越差的情况

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下,其肌酐系数越小;但是,在阴虚与阳虚两组患者之间,这种相关是有区别的,其两者的回归方程如下:

阴虚患者: $\hat{y} = 22.15 + 0.032x$ ($n = 101$, $r = 0.244$, $P < 0.01$)

阳虚患者: $\hat{y} = 16.61 + 0.063x$ ($n = 117$, $r = 0.440$, $P < 0.01$)

上式中阴虚患者的回归系数 0.032 虽小于阳虚患者的回归系数 0.063,但统计学上差异并不显著。在相同的 Ccr 时,则阳虚患者的肌酐系数明显低于阴虚患者的。例如,患者的 Ccr 分别为 100、50 与 20 时,他们的肌酐系数:阴虚组为 25.35、23.75 与 22.79,而阳虚组为 22.91、19.76 与 17.87,按 $S\hat{y}$ 进行统计,两组之间差异显著 ($P < 0.05$ 或 $P < 0.01$)。

患者的肌酐系数 y 又和尿尿素氮量 ($\text{mg/kg} \cdot \text{天}$) x 呈正相关;但是,这种相关在阴虚与阳虚两组之间是有明显区别的。他们的回归方程如下:

阴虚患者: $\hat{y} = 17.68 + 0.057x$ ($n = 101$, $r = 0.461$, $P < 0.01$)

阳虚患者: $\hat{y} = 10.07 + 0.106x$ ($n = 117$, $r = 0.590$, $P < 0.01$)

上式中阴虚患者的回归系数为 0.057,而阳虚患者的回归系数为 0.106,经统计学处理差异显著 ($P < 0.05$)。在相同的尿尿素氮量时,阳虚患者的肌酐系数明显低于阴虚患者的。例如在尿素氮分别为 100 与 50 时,阴虚组患者的肌酐系数 23.38 与 20.53,而阳虚组患者的肌酐系数为 20.67 与 15.37,按 $S\hat{y}$ 进行统计,两组之间差异非常显著 ($P < 0.01$)。

二、阴虚、阳虚患者尿钾、尿磷、尿镁的比较(表 2)及其和尿尿素氮的关系。

表 2 阴虚阳虚患者尿中钾、磷、镁含量的比较
 $\text{mEq/kg} \quad (\text{M} \pm \text{SE})$

组 别	尿钾(例数)	尿磷(例数)	尿镁(例数)
阴 虚 组	0.71 ± 0.048 (35)	0.38 ± 0.020 (22)	0.15 ± 0.009 (17)
阳 虚 组	$0.53 \pm 0.034\Delta\Delta$ (35)	$0.24 \pm 0.016\Delta\Delta$ (20)	$0.11 \pm 0.012\Delta$ (14)

由表 2 可见阳虚患者的尿钾、尿磷、尿镁均明显低于阴虚患者,组间差异显著 ($P < 0.05$ 或 $P < 0.01$)。

钾、磷、镁是人体的重要营养素,它们来自食物的供应,又主要从尿中排泄,因此尿钾、尿磷、尿镁的排泄量,可以反映患者对于外界营养素摄入的情况。本文则将 112、117 与 113 例慢性肾炎患者的尿钾、尿磷、尿镁的排泄量,分别和尿尿素氮量作了相关统计,其结果说明该三项指标均和尿尿素氮量呈正相关,而且相关非常显著 ($P < 0.01$)。

尿钾 y 与尿尿素氮量 x 的直线回归方程为:

$\hat{y} = 0.145 + 0.0048x$ ($n = 112$, $r = 0.580$, $P < 0.01$)

尿磷 y 与尿尿素氮量 x 的直线回归方程为:

$\hat{y} = 0.160 + 0.0013x$ ($n = 117$, $r = 0.484$, $P < 0.01$)

尿镁 y 与尿尿素氮量 x 的直线回归方程为:

$\hat{y} = 0.065 + 0.007x$ ($n = 113$, $r = 0.572$, $P < 0.01$)

按表 1 中正常人的尿尿素氮量为 $124.1 (\text{mg/kg} \cdot \text{天})$,再根据以上三个回归方程进行计算,则可知该正常人的尿钾为 0.74,尿磷为 0.32 与尿镁为 $0.15 (\text{mEq/kg} \cdot \text{天})$ 。由此可见表 2 中阴虚患者的尿钾、尿磷与尿镁较为正常,而阳虚患者的尿钾、尿磷与尿镁则低于正常。

讨 论

伴有低血浆蛋白症的慢性肾炎肾病型患者,在中医分型中多数为阳虚^(1,3)。本文的观察对象,事先就剔除了上述的肾病型患者,着重观察这类无低血浆蛋白症的非肾病型患者中阴虚与阳虚患者在营养学指标上的差异。这些阳虚的患者血浆蛋白含量均在正常范围,但是他们仍出现了阳虚的证候(包括浮肿在内)。这一结果说明阳虚的病理基础并不是低血浆蛋白症,而是与此低血浆蛋白症有关的机体营养不

良和能量代谢的降低。

人体除了需要蛋白质、糖、脂肪外，尚需从食物中摄取钾、磷、镁等元素。由于体内的钾、磷、镁主要经尿中排泄，因此尿钾、尿磷、尿镁和尿尿素氮量，都可作为反映患者营养状况的指标。

肌酐系数、尿钾、尿磷、尿镁四项指标均与尿尿素氮量呈正相关，说明它们有着共同的基础，这个基础就是患者的摄食量和机体的营养状况。肌酐系数和尿尿素氮量呈正相关，只在尿尿素氮量低于正常的情况下成立，前文已作报道⁽¹⁾。尿肌酐量降低是反映了人体蛋白质——热量的营养不良，因此它已成为临床上最主要的营养学指标^(5~7)。同时尿肌酐量的大小，主要是反映体内细胞量的多少，它和能量代谢的水平相一致^(1,8)。所以尿中肌酐与尿素排泄量的测定，是研究中医阴虚、阳虚中颇有理论价值的指标。

阳虚患者的肌酐系数、尿尿素量、尿钾、尿磷、尿镁均明显较低，这一结果提示了该型患者的机体营养不良和能量代谢降低。阳虚患者有蛋白质和热量严重不足的事实，曾被临床上营养调查的结果所证明⁽¹⁾。阴虚患者的尿尿素量偏低，尿钾、尿磷、尿镁的含量比较正常，但肌酐系数却明显增高，这提示了该型患者的营养状况尚正常，而体内的能量代谢增高。慢性肾炎患者的肌酐系数与Ccr、尿尿素氮量呈正相关，但这种相关在阴虚和阳虚两型患者之间

是有区别的，即在相同的Ccr或尿尿素氮量时，阴虚患者的肌酐系数明显较高，而阳虚患者的肌酐系数明显较低。由此也说明了患者肌酐系数的高低，除受到肾功能及营养状况的影响外，尚直接受体内能量代谢的影响。中医阴虚或阳虚证候群的出现，主要在于患者的营养状况和能量代谢的异常。综上所述，慢性肾炎患者阳虚的病理基础，系机体的营养不良而伴随了能量代谢的降低，而阴虚的病理基础，系机体的营养尚正常或不良而伴随了能量代谢的增高。

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复方苍耳油治疗慢性鼻炎 1,576 例

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我科 1974 年以来使用复方苍耳油治疗慢性鼻炎，疗效较好，现将 1,576 例结果报告如下。

药物制作 先将 1,000ml 小麻油温热后加入已打碎的苍耳子 160g 及辛夷 16g 浸泡 24 小时，再用文火煮沸至麻油熬至约 800ml 左右，冷却后过滤，瓶装备用。

治疗方法 慢性鼻炎，经 X 光摄片和上颌窦穿刺确诊副鼻窦炎除外的患者，每天滴本药 3~4 次。慢性单纯性鼻炎、干燥性鼻炎 7 天为一疗程，过敏性鼻

炎和萎缩性鼻炎 1 月为一疗程，一般 2~3 个疗程可收到满意效果。

治疗结果 疗效标准：显效：经 2~3 个疗程的治疗，症状基本消失，经过一定时间的随访，未再复发者。进步：用药 2~3 个疗程后，症状明显好转，再继续用药，仍能收到较好疗效者。本组显效率 73.8%，有效率 86.9%，而干燥性和萎缩性鼻炎疗效较好，有效率分别为 95.5% 及 88.9%。

Analysis of 100 Cases of Functional Uterine Bleeding

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100 cases of functional uterine bleeding treated in contrasting groups are reported. Of the 100 cases, 18 patients are in puberty, 57 in maturity, 25 in climacteric; 71 are married and 29 unmarried. The course of disease varies from three months to fourteen years, and 32 cases have a history of more than two years.

For observation the cases are divided into two groups -- group A consisting of 60 cases treated with Chinese medicine; group B consisting of 40 cases treated with traditional Chinese and western medicine combined. During bleeding, the most important thing is to stop the bleeding. For cases of excess heat type Zhi Xue Dan (止血丹) is used; for cases of deficiency-cold in spleen and kidney type, Zhi Xue Wan (止血丸) is used. When hemorrhage is stopped, menstrual cycle should be adjusted and ovulation promoted. For cases with deficiency of kidney Yang, Nü Bao Dan (女宝丹) is used; for cases with deficiency of kidney Yin, Nü Bao Wan (女宝丸) is used. Clomiphene or chorionic gonadotropic hormone is given at the same time to patients in group B. The curative effect is assessed through observation of menstrual cycles.

The result proves that the effect of stopping bleeding and regulating menstrual cycle is marked, $P < 0.01$. The ratio of effectiveness between group A and group B is $P < 0.01$, that is, treatment of group B is superior to that of group A. The function of correcting anemia, improving hormone level, promoting ovulation and regulating the menstrual cycle can be seen clearly through further contrasting observation of routine blood test, hormone level, basal temperature and mucus of cervix uteri in group B. (Original article on page 205)

Vulval Dystrophy Classified and Treated with TCM-WM

—Clinical Analysis of 101 Cases

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A series of 101 cases with vulval dystrophy were classified and treated with a special combined regime of western medicine and Chinese traditional medicine. The patients were classified into 3 categories according to clinical observation, biopsy of the vulva and the Chinese traditional medical diagnostic system: (1) stagnancy of liver energy (hypertrophy, atrophy, mixed, anaplasia); (2) deficiency in both the heart and the spleen (hypertrophy, atrophy, mixed); (3) Insufficiency of Yang of the spleen and the kidney (hypertrophy, atrophy, mixed, anaplasia). The regime was able to improve the cellular nutrition of the involved tissues, activate cellular growth, promote cellular metabolism and normalize pigmentation. After treatment, no case in this series became malignant and patients with moderate and mild anaplasia had a total recovery of the cellular changes. Fiftythree out of 101 patients were cured (52.8%); 47 improved (46.53%); one patient failed to respond. Total effect rate was 99.01%. One of the cured patients relapsed 4 years after the treatment. (Original article on page 207)

A Study of the Pathobiochemical Basis of Yang-and Yin-Deficiency in Patients with Chronic Nephritis by Urinalysis

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Based on the current theories of nutrition and metabolism, the contents of urinary creatinine (Cr), urea (Ur), potassium (K), inorganic phosphorus (P) and magnesium (Mg) of Yang-deficiency and Yin-deficiency patients with chronic nephritis were compared. Results showed that contents of urinary Cr, Ur, K, P and Mg of the Yang-deficiency patients were significantly lower than those of the Yin-deficiency patients and normal. The contents of urinary K, P and Mg of the Yin-deficiency patients were normal, the urinary Ur was subnormal, but the urinary Cr was higher than normal. In addition, the content of urinary Cr showed an evident positive correlation with the creatinine clearance (Ccr) and urinary Ur. With the same value of Ccr or urinary Ur, the content of urinary Cr in the Yang-deficiency patients was markedly lower than that in the Yin-deficiency patients. These findings suggested that the pathobiochemical basis of Yang-deficiency and Yin-deficiency may be explained as a morbid condition caused by disorders of nutrition and metabolism of the body. Yang-deficiency is a syndrome in patients with malnutrition and low metabolism, while Yin-deficiency is a syndrome in patients with normal or subnormal nutrition and high metabolism. (Original article on page 209)